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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,094	06/30/2003	Ravi F. Saraf	20140-00288-US1	5220
30678	7590	10/24/2006	EXAMINER	
CONNOLLY BOVE LODGE & HUTZ LLP				FREDMAN, JEFFREY NORMAN
P.O. BOX 2207				ART UNIT
WILMINGTON, DE 19899-2207				PAPER NUMBER
				1637

DATE MAILED: 10/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/608,094	SARAF, RAVI F.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Jeffrey Fredman	1637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE three MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 25 August 2006.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 160-200 is/are pending in the application.
- 4a) Of the above claim(s) 167-200 is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 160-166 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)  
 Paper No(s)/Mail Date 8/14/06; 3/17/07; 10/10/03
- 4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application
- 6) Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of Group I, claims 160-166 in the reply filed on August 25, 2006 is acknowledged. Applicant correctly notes that claim 167 should have been placed in Group II and this correction is appreciated. Claims 160-166 will be examined. Claims 167-200 are withdrawn from further prosecution.

### ***Information Disclosure Statement***

2. The information disclosure statement filed October 10, 2003 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Specifically, the reference CA titles "The quantum dot" was not submitted. This reference was therefore not considered.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 160-163 are rejected under 35 U.S.C. 102(b) as being anticipated by Adams et al (U.S. Patent 5,641,658).

Adams teaches a method comprising:

a) *Providing a substrate having defined therein an array of periodically spaced regions capable of defining a writable segment in a nucleic acid molecule at one or more locations where said periodically spaced regions contact said nucleic acid molecule* (see figures 2 and 3, where a substrate with regions is shown and see columns 10-12),

b) *Providing at least one double stranded nucleic acid molecule on said substrate thereby defining a plurality of said writable segments in said nucleic acid molecule at one or more locations where said periodically spaced regions are in contact with said nucleic acid molecule* (see column 14, examples 2 and 3, where nucleic acids are attached to supports),

c) *denaturing at least one of said writable segments by heating at least one of said writable segments* (see column 14, examples 2 and 3, where Adams teaches denaturation of the nucleic acids, especially at column 14, line 18),

d) *attaching at least one insertion compound to at least one nucleotide in said at least one writable segment* (see column 14, examples 2 and 3, especially column 14, lines 15-20)

*wherein said information is defined by the presence or absence of said insertion compound* (see column 14, lines 15-18 and lines 39-45, where the insertion compound

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is a biotin labeled nucleotide which is detected and thereby provides information on the presence or absence of the nucleic acid).

With regard to claim 161, Adams teaches incorporation of one nucleotide (see column 14, lines 15-18, where dNTPs are added for incorporation).

With regard to claims 162, Adams teaches the use of labels to label the DNA probes or target DNAs (see column 14, lines 15-18, where the dNTPs are biotin labeled).

With regard to claim 163, Adams teaches the use of fluorescently labels (see column 16, lines 30-35, where fluorescein labeled nucleotides are used).

5. Claims 160-165 are rejected under 35 U.S.C. 102(e) as being anticipated by Heller et al (U.S. Patent 6,017,696).

Heller teaches a method comprising:

- a) *Providing a substrate having defined therein an array of periodically spaced regions capable of defining a writable segment in a nucleic acid molecule at one or more locations where said periodically spaced regions contact said nucleic acid molecule* (see figures 8 and 9, column 7, lines 5-31, where thousands of sites are taught and column 46, example 12, where Heller teaches the APEX chips which have nucleic acids located in multiple different micro locations),
- b) *Providing at least one double stranded nucleic acid molecule on said substrate thereby defining a plurality of said writable segments in said nucleic acid molecule at one or more locations where said periodically spaced regions are in contact with said nucleic acid molecule* (see column 46, example 12,

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where double stranded DNA is formed on the array in each microlocation as shown in lines 25-45),

c) *denaturing at least one of said writable segments by heating at least one of said writable segments* (see column 46, lines 63-67 to column 47, lines 1-3, where Heller teaches denaturation of the segments),

d) *attaching at least one insertion compound to at least one nucleotide in said at least one writable segment* (see column 47, lines 4-35, and column 46, lines 54-62, where dNTPs are added to the nucleic acid)

*wherein said information is defined by the presence or absence of said insertion compound* (see column 47, lines 20-35, where the information in the sequences is defined by whether amplification occurs or not).

With regard to claim 161, Heller teaches incorporation of one nucleotide (see column 46, lines 54-62, where dNTPs are added for incorporation).

With regard to claims 162-163, Heller teaches the use of fluorescent labels to label the DNA probes or target DNAs (see column 26, lines 5-11, for example).

With regard to claims 164-165, Heller teaches heating using electrical current through a metal element arranged in the substrate (see column 46, lines 65-67 and column 47, lines 1-3, where voltage is applied through the electrode on the chip to denature the sample which will heat the sample).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 166 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heller et al (U.S. Patent 6,017,696).

Heller teaches a method comprising:

- a) *Providing a substrate having defined therein an array of periodically spaced regions capable of defining a writable segment in a nucleic acid molecule at one or more locations where said periodically spaced regions contact said nucleic acid molecule* (see figures 8 and 9, column 7, lines 5-31, where thousands of sites are taught and column 46, example 12, where Heller teaches the APEX chips which have nucleic acids located in multiple different micro locations),
- b) *Providing at least one double stranded nucleic acid molecule on said substrate thereby defining a plurality of said writable segments in said nucleic acid molecule at one or more locations where said periodically spaced regions are in contact with said nucleic acid molecule* (see column 46, example 12, where double stranded DNA is formed on the array in each microlocation as shown in lines 25-45),
- c) *denaturing at least one of said writable segments by heating at least one of said writable segments* (see column 46, lines 63-67 to column 47, lines 1-3, where Heller teaches denaturation of the segments),

d) *attaching at least one insertion compound to at least one nucleotide in said at least one writable segment* (see column 47, lines 4-35, and column 46, lines 54-62, where dNTPs are added to the nucleic acid)

*wherein said information is defined by the presence or absence of said insertion compound* (see column 47, lines 20-35, where the information in the sequences is defined by whether amplification occurs or not).

With regard to claim 161, Heller teaches incorporation of one nucleotide (see column 46, lines 54-62, where dNTPs are added for incorporation).

With regard to claims 162-163, Heller teaches the use of fluorescent labels to label the DNA probes or target DNAs (see column 26, lines 5-11, for example).

With regard to claims 164-165, Heller teaches heating using electrical current through a metal element arranged in the substrate (see column 46, lines 65-67 and column 47, lines 1-3, where voltage is applied through the electrode on the chip to denature the sample which will heat the sample).

Heller does not specifically teach the use of 100 nanosecond pulses.

Heller does, however, teach "The amount of voltage and the time period of application will be dependent on the length and base composition of the hybrid DNA complex (see column 46, line 66 to column 47, line 1).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to use the routinely optimized time for application of current since Heller teaches "The amount of voltage and the time period of application will be dependent on the length and base composition of the hybrid DNA complex (see column 46, line 66 to column 47, line 1). An ordinary practitioner would have recognized that the results optimizable variables of pulse length of the current could be adjusted to maximize the desired results. As noted in *In re Aller*, 105 USPQ 233 at 235,

More particularly, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.

Routine optimization is not considered inventive and no evidence has been presented that the selection of specific times for current application was other than routine, that the products resulting from that optimization have any unexpected properties, or that the results should be considered unexpected in any way as compared to the closest prior art.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey Fredman whose telephone number is (571)272-0742. The examiner can normally be reached on 6:30-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on (571)272-0782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jeffrey Fredman  
Primary Examiner  
Art Unit 1637

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